WE CLAIM :

1. Dispersion optimized fiber having higher spot area comprising a center core region 1, a cladding region 2, a ring core region 3 and an outer glass region 4, wherein the said center core 1 and the said ring core 3 have refractive indices higher than the said outer glass region 4 and the said cladding region 2 has lower refractive index than the said outer glass region 4, and the said refractive indices are constrained by the following equation 1:

$$n_1 > n_3 > n_4 > n_2 \qquad (1)$$

and values of the said refractive indices of the said regions are constrained by the following equations 2-4 to make the fiber having the low slope, the low dispersion and the higher effective area during the C and the L band transmissions:

$$0.008 > (n_1 - n_4) > 0.007 \qquad (2)$$

$$0.0018 > (n_3 - n_4) > 0.0014 \qquad (3)$$

$$-0.0005 > (n_2 - n_4) > -0.0007 \qquad (4)$$

wherein n_1, n_2, n_3 and n_4 represents the refractive index of the said center core region 1, said cladding region 2, said ring core region 3 and said outer glass region 4 respectively.

2. Dispersion optimized fiber according to claim 1, wherein said cladding 2 is provided onto the said outer periphery of the said center core 1, and the said ring core 3 is provided onto the said outer periphery of the said cladding 2, and the said outer glass region 4 surrounds the said ring core region 3.

3. Dispersion optimized fiber according to claim 1, wherein the fiber is insensitive to micro bend loss and dispersion slope no more than 0.08 ps/nm^2.km.

4. Dispersion optimized fiber according to claim 1, wherein the said refractive indices are further constrained by the following relationships :

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$(n_1 - n_4)$ = about 0.007 (5)

$(n_3 - n_4)$ = about 0.0016 (6)

$(n_2 - n_4)$ = about -0.0006 (7)

5. Dispersion optimized fiber according to claim 1, wherein the radius of each of the said regions are restricted by the following equations 8-10 :

a_1 = about 2.7 µm (8)

a_2 = about 6.3 µm (9)

a_3 = about 8.8 µm (10)

wherein a_1, a_2 and a_3 represents radius of the said center core region 1, the said cladding region 2 and the said ring core region 3 respectively.

6. Dispersion optimized fiber according to claim 1, 2, 3, 4 or 5, wherein it comprises single annular ring 2 of germanium and fluorine doped material between a germanium doped said center core 1 and said ring core 3, and said outer pure glass region 4 is provided onto the outer periphery of the germanium doped said ring core 3.

7. Dispersion optimized fiber according to claim 1, 2, 3, 4 or 5, wherein the attenuation at 1550 nm is $\leq$ 0.22, the dispersion at 1530 to 1565 nm is 2.2 to 6.0 ps/nm.km and the dispersion at 1565 to 1625 nm is 4.0 to 11 ps/nm.km.

8. Dispersion optimized fiber according to claim 1, 2, 3, 4 or 5, wherein the dispersion slope (typical) is 0.07 ps/nm^2.km, the Polarization Mode Dispersion is $\leq$ 0.1 ps / km$^{0.5}$ and the Mode Field Diameter is 9.6 $\pm$ 0.4 µm.

9. Dispersion optimized fiber according to claim 1, 2, 3, 4 or 5, wherein the cut off wavelength (cable) is $\leq$ 1280 nm, the core concentricity is < 0.6 µm and the effective area (typical) is 70 micron^2.

10. Dispersion optimized fiber according to claim 1, 2, 3, 4 or 5, wherein the micro bending (Pin array) is < 0.05 dB at 1550 and 1625 nm, the macro bending (single 32 mm mandrel and 100 turns at 60 mm mandrel) is < 0.5 dB at 1550 and 1625 nm.

11. Dispersion optimized fiber according to claim 1, wherein the said cladding region 2 is divided into two regions – inner cladding region 2 and an outer cladding 4 with the said ring core 3 disposed therebetween.

12. Dispersion optimized fiber according to claim 11, wherein the fiber comprises a center core 1, an inner cladding 2, a ring core 3, an outer cladding 4 and the outer glass region 5, and the said center core 1 and the said ring core 3 have the refractive indices higher than the said outer glass region 5, and the said inner cladding region 2 and the said outer cladding region 4 have the lower refractive indices than the said outer glass region 5, and are constrained by the following equation (11):

$$n_1 > n_3 > n_5 > n_2 \approx n_4 \qquad (11)$$

and values of the said refractive indices of the said regions are constrained by the following equations 12-15 to make the fiber having the low slope, the low dispersion and the higher effective area during the C and the L band transmissions:

$$0.008 > (n_1 - n_5) > 0.007 \qquad (12)$$

$$0.0018 > (n_3 - n_5) > 0.0014 \qquad (13)$$

$$-0.0005 > (n_2 - n_5) > -0.0007 \qquad (14)$$

$$-0.0005 > (n_4 - n_5) > -0.0007 \qquad (15)$$

wherein n_1, n_2, n_3, n_4 and n_5 represents the refractive indices of the said center core region 1, the said inner cladding region 2, the said ring core region 3, the said outer cladding region 4 and the said outer glass region 5 respectively.

13. Dispersion optimized fiber according to claim 11, wherein the refractive indices of the said inner cladding region 2 and the said outer cladding region 4 are equal.

14. Dispersion optimized fiber according to claim 11, wherein the said inner cladding 2 is provided onto the outer periphery of the said center core 1, and the said ring core 3 is provided between the said inner cladding 2 and the said outer cladding 4 is provided onto the outer periphery of the said ring core 3, and the said outer glass region 5 surrounds the said outer cladding 4.

15. Dispersion optimized fiber according to claim 11, wherein the fiber is insensitive to micro bend loss and dispersion slope no more than 0.08 ps/nm^2.km.

16. Dispersion optimized fiber according to claim 11, wherein the said refractive indices are further constrained by the following relationships (16-19):

$$(n_1 - n_5) = \text{about } 0.007 \quad (16)$$

$$(n_3 - n_5) = \text{about } 0.0016 \quad (17)$$

$$(n_2 - n_5) = \text{about } -0.0006 \quad (18)$$

$$(n_4 - n_5) = \text{about } -0.0006 \quad (19)$$

17. Dispersion optimized fiber according to claim 11, wherein the radius of each of the said regions are restricted by the following equations (20-23) :

$$a_1 = \text{about } 2.7\ \mu m \quad (20)$$

$$a_2 = \text{about } 6.3\ \mu m \quad (21)$$

$$a_3 = \text{about } 8.8\ \mu m \quad (22)$$

$$a_4 = \text{about } 10.8\ \mu m \quad (23)$$

wherein a_1, a_2, a_3 and a_4 represents radius of the said center core region 1, the said inner cladding region 2, the said ring core region 3 and the said outer cladding region 4 respectively.

18. Dispersion optimized fiber according to claim 11, 12, 13, 14, 15, 16 or 17, wherein the said fiber comprises two annular rings 2 and

4 of germanium and fluorine doped material between a germanium doped center core 1 and ring core 3, and the outer pure glass region 5 is provided onto the outer periphery of the germanium and fluorine doped outer cladding 4.

19. Dispersion optimized fiber according to claim 11, 12, 13, 14, 15, 16 or 17, wherein the attenuation at 1550 nm is $\leq$ 0.25, the dispersion at 1530 to 1565 nm is 1.8 to 6.0 ps/nm.km and the dispersion at 1565 to 1625 nm is 4.0 to 11 ps/nm.km.

20. Dispersion optimized fiber according to claim 11, 12, 13, 14, 15, 16 or 17, wherein the dispersion slope (typical) is 0.07 $ps/nm^2.km$, the Polarization Mode Dispersion is $\leq$ 0.1 ps / $km^{0.5}$ and Mode Field Diameter is 9.6 $\pm$ 0.4 µm.

21. Dispersion optimized fiber according to claim 11, 12, 13, 14, 15, 16 or 17, wherein the cut off wavelength (cable) is $\leq$ 1480 nm, the core concentricity < 0.6 µm and the effective area (typical) is 70 $micron^2$.

22. Dispersion optimized fiber according to claim 11, 12, 13, 14, 15, 16 or 17, wherein the micro bending (Pin array) is < 0.05 dB at 1550 and 1625 nm, the macro bending (single 32 mm mandrel and 100 turns at 60 mm mandrel) is < 0.5 dB at 1550 and 1625 nm.